029A

INSTRUCTION MANUAL

IMPORTANT! Read these instructions before using the new 029A Key Machine.
Ensure that all safety recommendations are followed!

ILCO UNICAN®

This manual is registered and applies specifically to the machine which carries this serial number. It properly identifies your model and assures you will receive correct parts, if and when you require replacement parts. Retain this manual in a safe place.

If ownership of this machine is transferred, this service manual should accompany the machine.
When seeking service information about this machine, refer to Model No. (which is 029A) and the part number desired (see pages 6 to 8). Note that many parts are not interchangeable with other ILCO UNICAN machines.

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ONE YEAR LIMITED WARRANTY

ILCO UNICAN warrants to the original buyer of any new model 029A machine that it will repair or replace, at its option, any part of any machine which proves, to the reasonable satisfaction of ILCO UNICAN, to have defects arising from the faulty manufacture of the machine or from defective material or components, during a period of one (1) year from the date of shipment of the machine by ILCO UNICAN, provided that the machine is returned by prepaid transport to ILCO UNICAN or to its authorized representative before the expiry of the warranty period together with a detailed description of the alleged defect(s). ILCO UNICAN may, at its discretion, elect to refund the purchase price allowable to the part affected, or to issue a credit if the price therefore remains unpaid.

ILCO UNICAN sells precision-made machines. The buyer assumes all risks, and ILCO UNICAN shall not be liable for any reason, if the machine has been subjected to improper installation, improper use, improper or inadequate maintenance, negligence, if any unauthorized modification or alteration is made to the machine, or in case of accident. For greater certainty, any machine not operated in accordance with ILCO UNICAN's printed instructions or operated beyond its rated capacity shall not be covered by this or any other warranty.

Any and all warranties made by ILCO UNICAN on any machine, product, or component thereof shall be effective only if and for so long as the buyer complies with all payment obligations pursuant to the buyer's accepted and acknowledged order. Failure to meet such payment obligations shall void all warranties and not extend the period of time for which such machine, product of component thereof is warranted irrespective of whether or not payment is eventually made.

These warranties are in lieu of and not in addition to any other warranty of condition, expressed or implied, including without limitation merchantability, fitness for a particular purpose or latent defects. The buyer releases ILCO UNICAN from any liability for any reason other than a breach of its warranties hereunder.

The liability of ILCO UNICAN shall in no case, including negligence, exceed the purchase price of the defective machine, nor shall ILCO UNICAN be liable for any personal injuries, property damage or consequential damages.
Use only genuine ILCO UNICAN replacement parts on this machine!

Serial number : _____

WARNING – SAFETY NOTICE

IMPORTANT - Please read carefully before operating machine.

Safety begins with education, and continues with proper application. All personnel who operate your machine should read the supplied Operator's Manual for information on how to properly operate it. The likelihood of accidents and miscuts will be greatly reduced.

General safety

- Safety glasses must be worn to reduce the possibility of eye injury while operating or in the immediate vicinity of key cutting equipment.
- Always turn machine off before making adjustments or inserting or removing keys.
- Machine should be located in an area accessible only by authorized operators. Location must be such that customers and other personnel are not subject to potential injury from "flying chips".
- Do not defeat safety features built into your machine. Removal or modification of safety shields, cutter guards, and other safety devices should be strictly forbidden.
- At no time should the mechanically-driven parts of the machine be touched while it is in operation. The operator should take care to ensure that loose-fitting clothing, long hair, etc. are kept from the area of machine operation.
- Your machine has been specially designed and built for key cutting purposes only and should be operated according to the Operator's Manual. All other uses are strongly discouraged as potentially dangerous, and should not be attempted! Such use will immediately void the machine's warranty.
- Some states have specific age restriction concerning the operation of certain types of equipment. Check local and state ordinances for compliance.

Electrical safety

- (120 Volt models) Your machine is designed to operate using 120 Volt A.C. 60 Hz. electrical current. It is supplied with a three-prong power plug which should be used with a properly grounded three-prong outlet only. Do not defeat the safety purpose of the plug by modifying or using with non-grounded outlets!
- To reduce risk of fire or electrical shock, do not expose or operate machine in damp or wet locations.
- Electrical problems should be referred to qualified repair technicians. If the machine is under warranty, contact Ilco Unican at the address printed on the cover. (ILCO UNICAN also offers repair service for out-of-warranty machines. Contact ILCO UNICAN for details.)
- Always unplug the machine before removing the hood or changing the cutter wheel.

Grounding instructions

- In the event of a malfunction or breakdown, grounding provides a path of least resistance for electric current to reduce the risk of electric shock. This machine is equipped with an electric cord that has an equipment-grounding conductor and a grounding plug. The plug must be plugged into a machine outlet that is properly installed and grounded in accordance with all local codes and ordinances.
- Do not modify the plug provided - if it will not fit the outlet, have the proper outlet installed by a qualified electrician.
- Improper connection of the equipment-grounding conductor can result in a risk of electric shock. The conductor with insulation that has a green outer surface (with or without yellow stripes) is the equipment-grounding conductor. If repair or replacement of the electric cord or plug is necessary, do not connect the equipment-grounding conductor to a live terminal.
- Check with a qualified electrician or service personnel if the grounding instructions are not completely understood, or if in doubt as to whether the machine is properly grounded.
- Use only 3-wire extension cords that have 3-prong grounding plugs and 3-pole receptacles that accept the machine's plug.
- Repair or replace damaged or worn cords immediately.

CONSIGNES DE SÉCURITÉ

IMPORTANT : Veuillez lire attentivement ce qui suit avant d'utiliser la machine.

La sécurité commence avec la prévention et se poursuit en agissant prudemment. Tout le personnel qui utilisera cette machine devrait lire le guide d'utilisation fourni afin de savoir comment faire fonctionner la machine. Les chances d'accidents et de clés mal taillées seront grandement réduites.

Sécurité générale:

- Toujours porter des lunettes de protection lorsque vous vous trouvez à proximité de la machine à tailler les clés en marche ou lorsque vous l'utilisez afin de réduire tout risque de blessures aux yeux.
- Toujours arrêter la machine avant de la régler ou d'insérer ou de retirer des clés.
- Placer la machine dans un endroit réservé uniquement aux utilisateurs. cet endroit devra être tel que la clientèle et le reste du personnel seront protégés contre les risques de projection de copeaux susceptibles de causer des blessures.
- Ne pas modifier aucun dispositif de sécurité installé sur cette machine. Il est strictement défendu de modifier ou d'enlever l'écran de protection, les protecteurs de la fraise ou tout autre dispositif de sécurité.
- Ne jamais toucher aux pièces mécaniques d'entraînement lorsque la machine fonctionne. L'utilisateur ne doit pas non plus porter des vêtements amples et doit avoir les cheveux attachés lorsqu'il se trouve à proximité de la machine.
- Cette machine a été conçue et fabriquée uniquement pour tailler des clés et doit être utilisée tel que décrit dans le guide d'utilisation. Il serait dangereux d'essayer d'utiliser cette machine à d'autres fins. Ceci aurait pour conséquence de rendre nulle la garantie de la machine.
- Certaines provinces imposent des restrictions d'âge pour certains types de machines. Vérifier auprès des autorités locales et provinciales pour être conforme à la loi.

Sécurité électrique :

- (Modèles 120 volts) Cette machine est conçue pour fonctionner à l'électricité sur du 120 V-c.a. à une fréquence de 60 Hz. La machine est munie d'un câble électrique à fiche tripolaire lequel ne doit être utilisé qu'avec une prise de courant tripolaire. Ne pas modifier la fiche du câble et ne pas l'utiliser dans une prise de courant non reliée à la terre (polarisée).
- Afin de réduire les risques de feu ou de chocs électriques, la machine ne doit pas être exposée à l'humidité ou à l'eau.
- Seuls des techniciens qualifiés doivent procéder aux réparations d'ordre électrique. Si la machine est sous garantie, communiquer avec ILCO UNICAN (adresse, n° de téléphone et n° de télécopieur sur la page couverture). ILCO UNICAN offre également un service de réparation pour les machines dont la garantie est expirée.
- **Toujours** débrancher la machine avant d'enlever le couvercle ou de changer la fraise.

Directives de mise à la terre

- Advenant le mauvais fonctionnement ou une panne de la machine, la mise à la terre fournit un trajet de moindre résistance pour le courant afin de réduire tout risque de chocs électriques. Cette machine est munie d'un câble électrique équipé d'un conducteur de protection et d'une fiche de terre. La fiche doit être branchée à une prise de courant correspondante adéquatement installée et reliée à la terre conformément aux codes et aux règlements locaux.
- Ne pas modifier la fiche. Si elle ne correspond pas à la prise, vous adresser à un électricien pour installer la prise adéquate.
- Le raccordement inadéquat du conducteur de protection peut entraîner des risques de chocs électriques.

  Le conducteur dont la surface extérieure de l'isolant est verte (avec ou sans rayures jaunes) constitue le conducteur de protection. Si le câble électrique ou la fiche doit être réparé ou remplacé, ne pas brancher le conducteur à une borne sous tension.
- Vérifier auprès d'un électricien ou du personnel de service si vous ne comprenez pas les directives de mise à la terre ou si vous avez des doutes quant à la mise à la terre adéquate de la machine.
- Utiliser seulement des prolongateurs trifilaires munis de fiches et de prises tripolaires acceptant la fiche de la machine.
- Réparer ou remplacer immédiatement les câbles endommagés ou usés.

Congratulations!
You've purchased a superior key cutting machine.

The model 029A code/duplicating machine is designed for maximum versatility and convenience. Its "dual function" design allows the operator to originate a key by code where necessary, or duplicate an existing key when available.

The machine features exclusive four-way vise jaws designed to accommodate virtually any standard automotive key without the need for adapters. Even double sided automotive keys can be duplicated or code cut with ease; the four-way jaws include stations ideally suited to gripping these keys and is capable of gripping them in the groove or milling for enhanced performance when necessary (see illustration on page 12.)

Accurate, easy to operate and maintain, the model 029A delivers excellent performance at an economical price!

Unpacking instructions

Your 029A key machine has been shipped to you in a sturdy, specially-cushioned container to prevent the possibility of damage during handling and shipment. Once the machine is removed from the carton, it should be set up on a level workbench and wiped free of all rustproofing oil. The machine is adjusted at the factory and test keys have been cut on it, but it is recommended that you check the adjustments to make sure they have not slipped or shifted during transit (see page 18 "Adjusting for depth of cut").

Safety

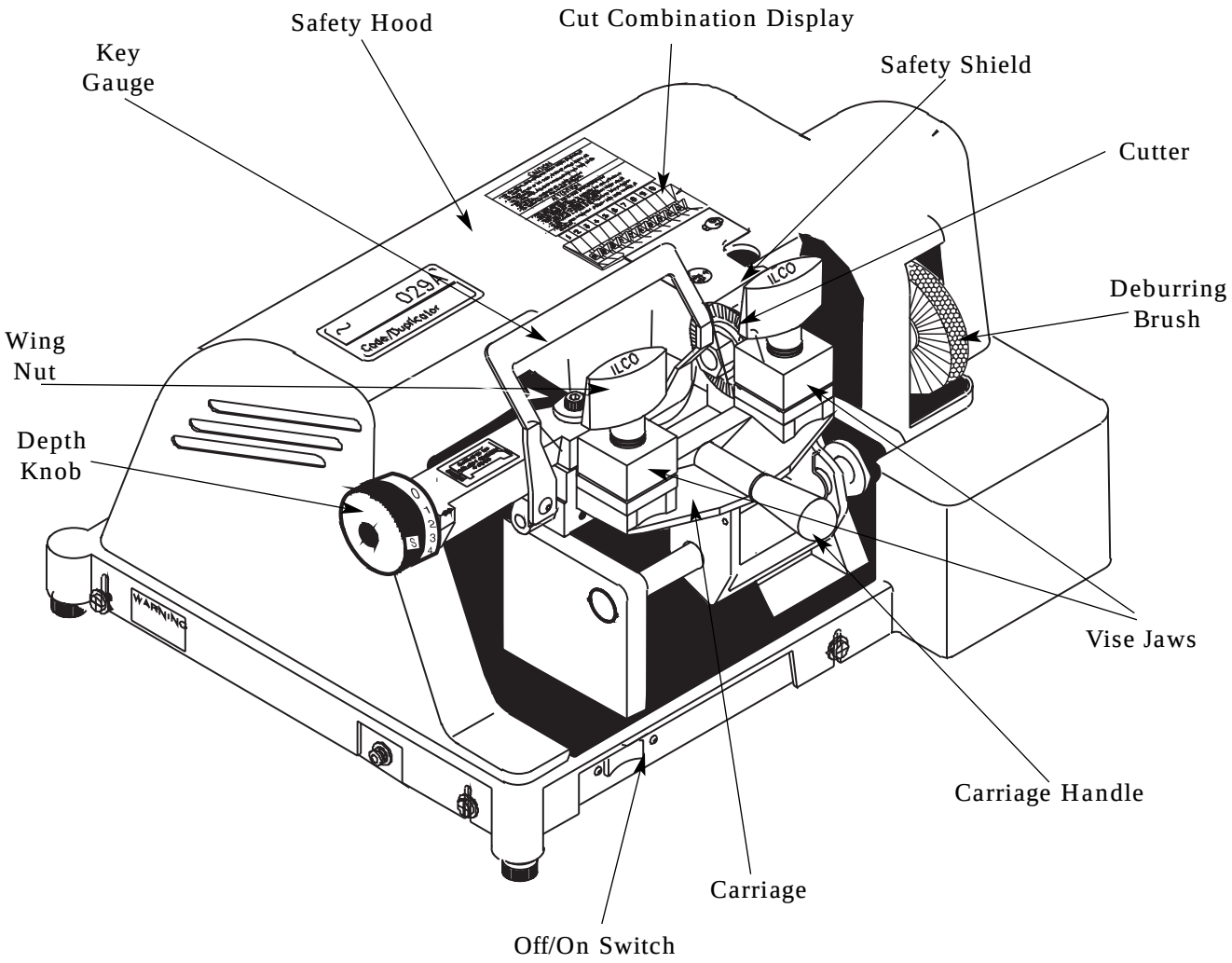
The 029A has been engineered to duplicate/code cut cylinder (paracentric) keys. It is not intended or designed for any other purpose. The machine operator assumes all liability when using this machine in a manner inconsistent with its stated design purpose. Refer to page 3 for complete safety information before operating the machine.

ILCO UNICAN strongly recommends the use of protective eye glasses or goggles when operating this machine, or when in the vicinity of the machine while it is being operated. Protective eye wear prevents injuries! The machine should be turned off before loading or unloading keys.

When the key machine is operating, be careful not to contact the vise jaw or carriage against the cutting wheel as this will cause damage to the cutter, jaw, or carriage.

CAUTION! **DO NOT DESTROY OR DISCARD THIS VALUABLE SHIPPING CARTON. STORE IT CAREFULLY IN A SAFE PLACE. THIS CARTON SHOULD BE USED WHENEVER THE MACHINE IS MOVED OR SHIPPED.**

OPERATING PARTS

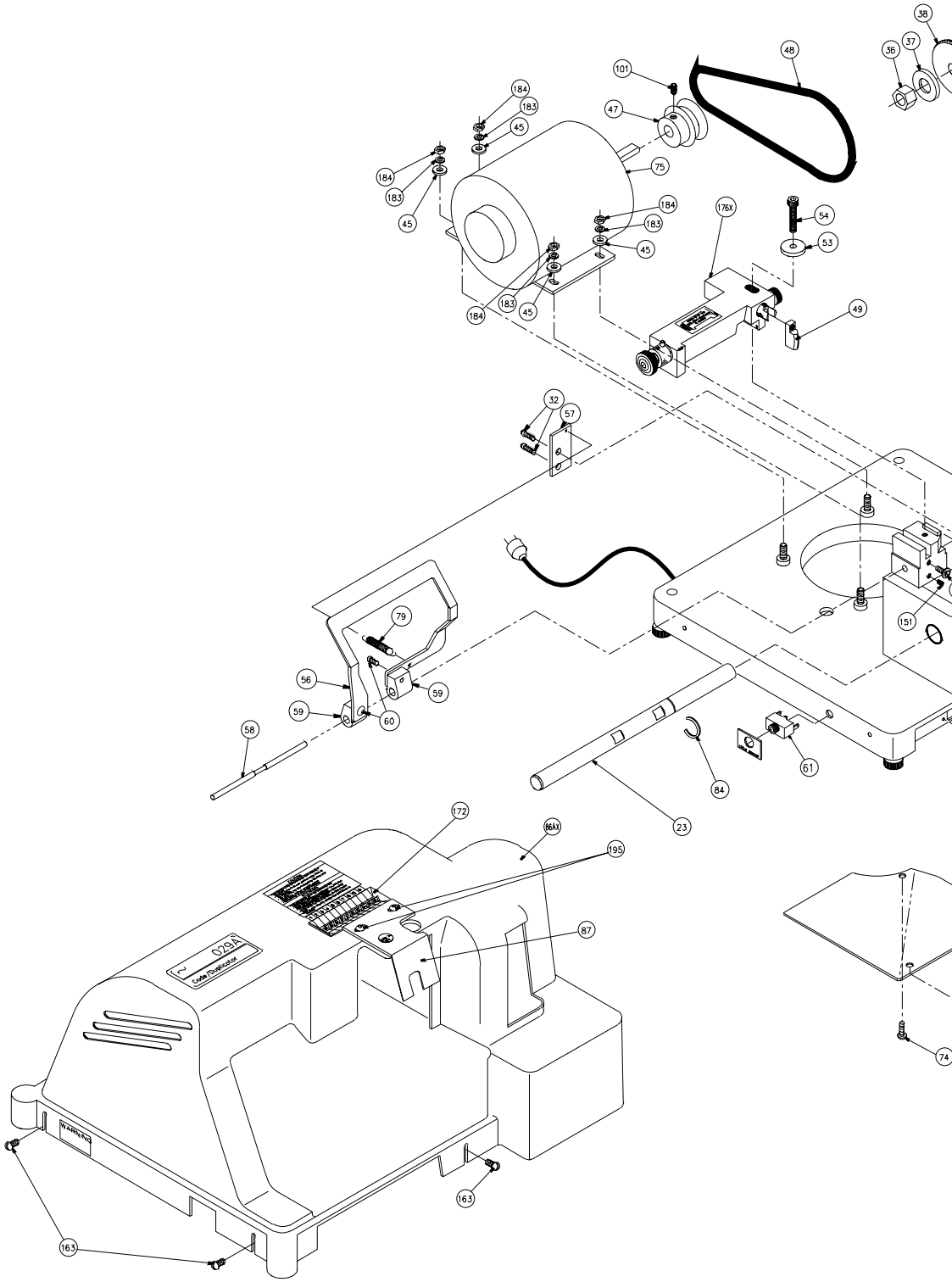


OPERATING PARTS IDENTIFICATION

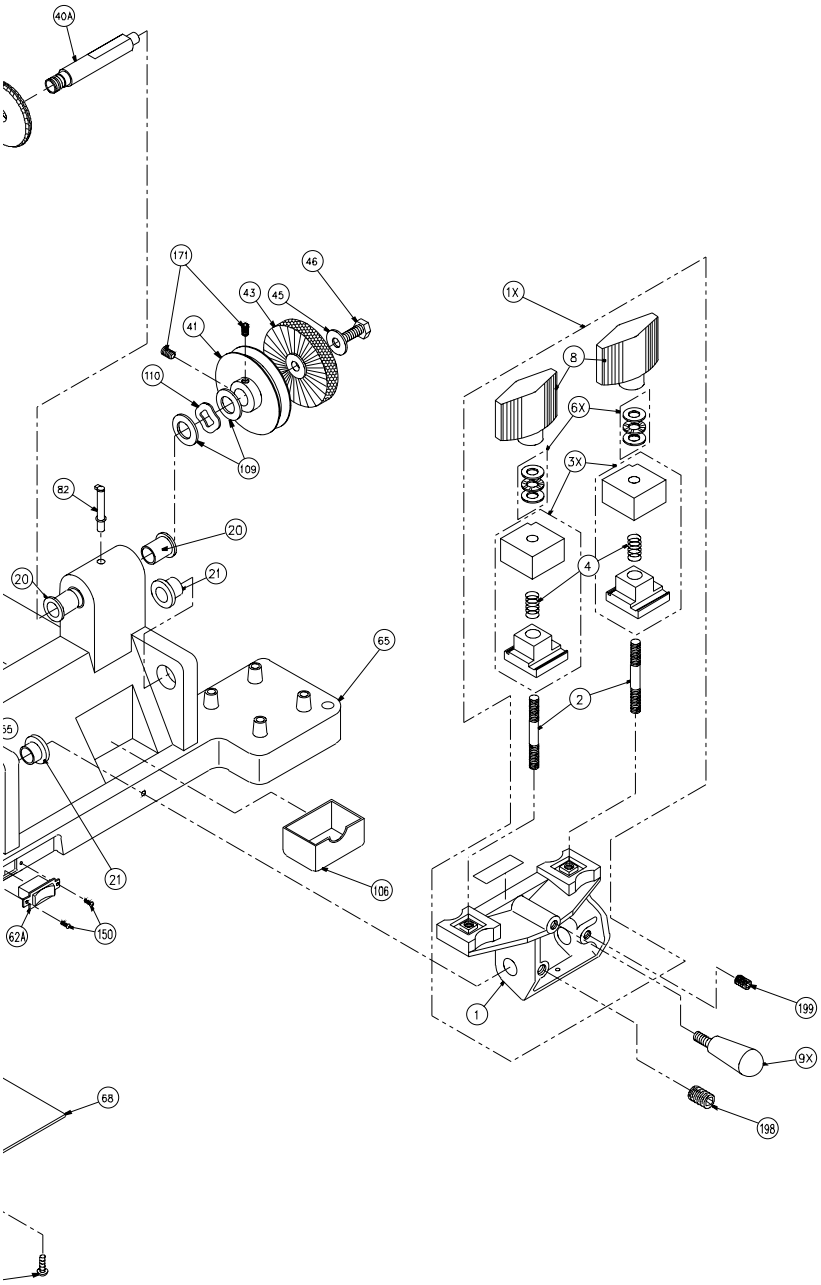
Refer to page 6

Part No.	Identification
024B-1	Carriage
029A-3X	Vise Jaw Assembly (2)
025-8	Wing Nut (2)
045-23	Carriage Shaft
CU29	CU29 Cutter
814-00-51	Deburring Brush
029A-49	Cutter Guide (stylus)
025-55	Adjusting Screw
029A-56	Key Gauge
025-62A	Off/On Switch
029A-86X	Safety Hood Assy.
029A-87	Safety Shield

EXPLODED VIEW



EXPLODED VIEW



EXPLODED VIEW PARTS LIST

Refer to pages 6-7 for illustration

Ref.	Part no.	Description	Ref.	Part no.	Description
1	024B-1	Carriage	86	029A-85	Safety hood with 029A decal
1X	024B-1X	Carriage assembly	86X	029A-86X	Safety hood assembly
2	025-2	Carriage stud	87	029A-87	Safety shield
3X	029A-3X	Vise jaw assembly	88	029A-88	Shield screws, 10-32 x 1/2
4	025-4	Vise jaw spring	89	045-89	Lock washer, #10
6X	025-6X	Thrust bearing set	90	025-90	Nut, #10-32
8	025-8	Wing nut	91	024B-91	Power cord
9X	040-9X	Carriage handle	92	024B-92	3 wire motor cable
20	025-20	Cutter shaft bushing	101	025-101	Motor pulley set screw
21	025-21	Carriage shaft bushing	106	040-106	Chip Tray
23	024-23	Carriage shaft	107	029A-107	Spacer
32	024B-32	Button head. screw, 10-24 x 3/8”	109	025-109	Bearing washer
36	025-36	Cutter nut, N-4	110	025-110	Wave washer
37	025-37	Cutter spacer	146	040-146	Power cord strain relief
38	CU29	CU29 cutter	150	040-150	Switch screw (6-32 x 1/4”)
40A	025-40A	Cutter shaft	151	040-151	Set screw (8-32 x 38”)
41	025-41	Cutter shaft pulley	160	025-160	Caution label
43	814-00-5	Nylon brush	163	045-163	Hood screw
45	025-45	Brush bolt washer, 5/16	170	029A-170	Bushing Spacer
46A	025-46A	Hex head screw, 5/16-18 x 3/4	171	025-171	Cutter pulley set screw, 3/8” -18
47	025-47	Motor pulley 2” - 3L	172	029A-172	Cut Combination Display
48	025-48	V-Belt, 3L-180	173	029A-173	Cutter Guide Screw
49	029-49	Cutter guide (stylus)	174	029A-174	Cutter Guide Lock Screw
53	025-53	Cutter guide binding washer	175	029A-175	Depth Knob Retaining Screw
54	029-54	Cutter guide binding screw	176X	029A-176X	Cutter guide Block Assy.
55	025-55	Adjusting screw	183	040-183	1/4" Lock washer
56	029A-56	Key gauge	184	040-184	1/4-20 Hexnut
57	024B-57	Key gauge bracket	194	045-194	#10 Flat washer
58	024B-58	Key gauge dowel pin	195	045-195	10-32 x 1/2” Button hd. Screw
59	025-59	Key gauge housing	198	045-198	7/16-14 x 3/4” set screw
60	025-60	Cap screw, 8-32 x 1/2”	199	045-199	1/4-20 x 1/2” set screw
61	025-61	Circuit Breaker, ETA 1658	IM	029A-IM	Instruction manual
62A	025-62A	On/Off switch	NS	040-240	220V 1/4 HP motor
65	045-65	Main Base, machined			
68	040-68	Electrical cover			
70	040-70	Rubber Mount			
74	040-74	Truss head screw, 8-32			
75	040-75	Motor, 1/4hp,115V			
79	029A-79	Key gauge spring			
82	025-82	Oil cup			

UNPACKING

The 029A key machine is shipped completely assembled and pre-adjusted. Upon unpacking the machine, locate the nylon band securing the carriage assembly and cut it to allow the carriage to drop to its normal “down” position. At this point, you should be able to slide the carriage sideways.

TEST KEYS

A series of cut keys are supplied with your machine. These keys were cut on your machine and represent the result of our quality inspectors' work before approving your machine for shipment. The keys are reproductions of factory-dimensioned pattern keys and are accurate to .002" or less. Save these keys and use them as standards to check the accuracy of cuts in the keys you make. Duplicating a key and then using a key micrometer or caliper to compare the actual depth of the cuts on both the duplicate and the pattern key will allow you to see if your machine is cutting too deep or too shallow, thus indicating that an adjustment of the cutter guide is necessary.

PROPER KEY CUTTING TECHNIQUES

Even though your 029A key machine is designed to make key cutting fast, efficient and accurate, operator skill is important. The actual mechanics of placing keys within the vise jaws is simple to learn, but there are some basics that must be followed. A properly adjusted key machine used by someone who ignores good key cutting techniques will NOT produce a good key. The way a person clamps a key into the vise jaws is critical to the accuracy of the duplicated key.

Remember - the real purpose of a duplicate or code cut replacement key is to operate the lock for which it was intended. If customers return keys, you should reexamine your cutting techniques and adjustment of the machine.

Here are some important operating tips:

1. Vise jaws - clean them regularly so that no metal chips lie under the keys. **It is essential that both keys lie flat across the entire width of each vise jaw. Neither key should be tilted.**
2. Do NOT use pliers or other tools to tighten the vise jaws. Firm hand pressure is sufficient.
3. Keep the carriage shaft free of metal chips. A thin film of oil can be applied to it. The carriage should be free to move without binding.
4. NEVER touch the shoulder of a key to the side of the cutter guide. This will cause the shoulder of the key blank to touch the side of the cutting wheel. When this happens, some of the metal will be cut away from the shoulder of the key blank. If the resulting duplicated key is duplicated two, three, four times over, an error will accumulate and cause a non-operating key. Do not grind away the shoulder.
5. Don't run the cutter into the vise jaw; this will dull the cutter, and reduce cutter efficiency.
6. Keep the cutter clean. Don't let any foreign objects or instruments blunt it. This cutter is a precise cutting tool and should be handled with care.
7. Lubrication of moving parts is important. An oil cup is provided to keep the cutter shaft bearings well lubricated. The carriage spindle should be lubricated with a thin film of oil and wiped free of chip build up. The lubrication procedures should be performed every 2-3 weeks depending on usage. (5-7 drops of a lightweight machine oil such as “3-in-1” or equivalent is sufficient for the oil cup.)

FOUR WAY VISE JAWS

The highly versatile ILCO UNICAN 029A is capable of creating a key from a code number (cutting by code), or copying a customer's existing key (duplicating). The ultimate goal in either application is to produce an accurately cut key that smoothly operates in the lock cylinder it is intended. While the goal is the same, there are important differences between code cutting and duplicating. Please read the following sections of this manual carefully!

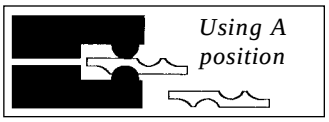
Using the four-way vise jaws

Your 029A is equipped with the ILCO UNICAN versatile four-way vise jaws. They feature four unique clamping surfaces to securely grip virtually any typical cylinder key (see Fig. 1).

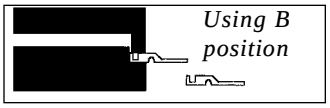
Figure 1 Rotate both jaws as a set

IMPORTANT: The correct vise jaw positions to use for all lock applications covered by your 029A key machine are listed in the Application Guide accompanying this manual. It is important, especially for cutting keys by code, that the vise jaw positioning indicated in the Application Guide be used to assure accurate results.

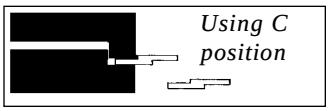
A - For holding double-sided keys by gripping their center groove(s).



B - For holding single-sided automotive keys, as well as most house and padlock keys.



C - For holding certain keys, such as most “Ford types” by gripping along their edge, allowing the “center ridge” of the key to rest against the face of the vise.



Code - Specific to the left side vise jaw, this position is used only when cutting keys by code. All spacing keys are clamped using this position **except for those used for cutting single sided keys.** Refer to the Application Guide for vise jaw positioning instructions for specific key types.

To reposition the vise jaws, as from A to B, first loosen the wing nuts. Then lift upward on the top and bottom of each vise jaw as a complete unit to raise them above their seat in the carriage. Rotate the jaws until the chosen vise position is facing toward the rear of the machine and lower the jaws back into contact with the carriage. Both left and right vise jaws should be rotated to the same position, except when cutting by code.

Aligning keys in the vise jaws for duplication Keys with shoulders

WARNING: Do not install or remove keys unless the off/on switch is in the <u>off</u> position.

After positioning the vise jaws to the proper setting, both the pattern key and the key blank must be properly aligned and securely clamped in the vise jaws. To do this, slide the machine's carriage assembly towards the right and position the appropriate key blank in the carriage's RIGHT vise jaw with the head of the blank pointing to the left.

Ensure that the shoulder of the key blank is roughly aligned with the red mark on the vise jaw face. Verify that the key blank is held level (not tilted), then tighten the wing nut. Position the "original" or pattern key in a similar manner into the LEFT vise jaw.

Next , lower the key gauge and position the carriage so that the edges of the gauge contact the shoulders of both the original and blank key **at the same time.** You may have to loosen the wing nut securing one of the keys and reposition it slightly. **It is important that the shoulder of both keys are in contact with the gauge at the conclusion of this step.**

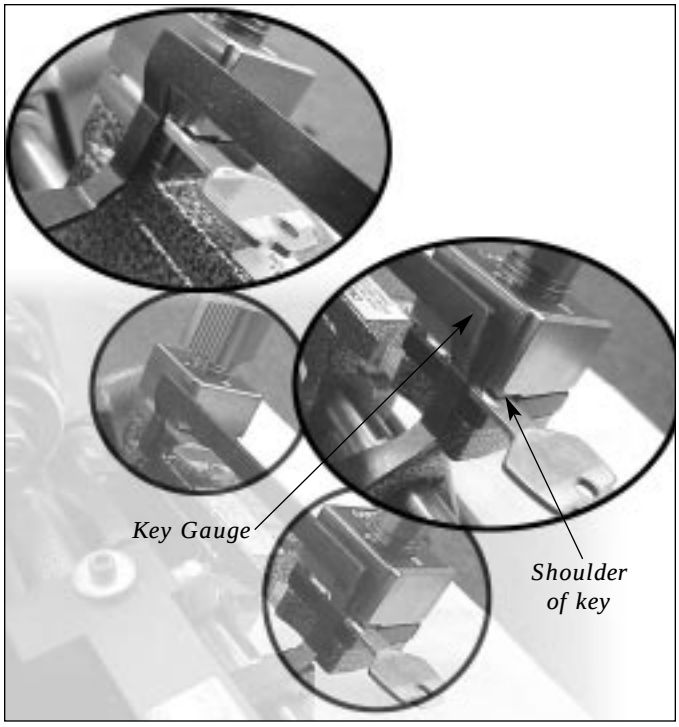


Figure 2 - Aligning shoulders of keys with key gauge

Aligning keys in the vise jaws for duplication Keys without shoulders

On keys such as the Ford double-sided key, which do not have a conventional shoulder, the tip of the key is used as the aligning point (see Fig. 3). Clamp the blank key in first and move the machine carriage to the left. Lower the key gauge and position the carriage so the tip of the key blank touches the key gauge. Install and align the pattern key in the left vise jaw in the same manner.

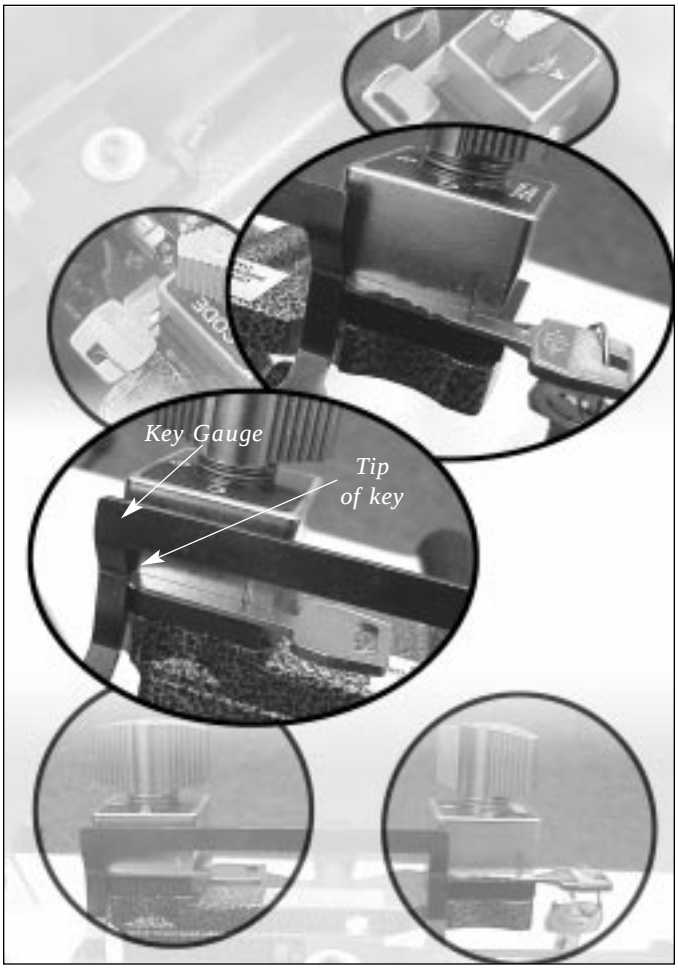


Figure 3

THE CUTTING OPERATION

WARNING: Do not install or remove keys unless the off/on switch is in the off position.

1. **Set machine in duplication mode.** This is accomplished by positioning the depth knob in to its deepest cut position. (This is the last number, usually the highest, encountered as you rotate the depth knob away from you.) **At this point**, push in on the cutter guide until it stops and tighten the locking screw in that position (See Fig. 4)

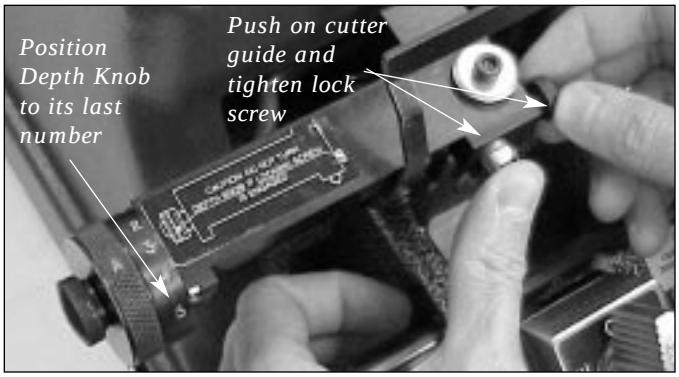


Figure 4

2. Rotate both vise jaws to the station suitable for the key being duplicated.
3. Insert the blank key and pattern key into the vise jaws using the appropriate method described under “Aligning Keys in the Vise Jaws”. Be sure that both keys are laying level in the vise jaws and are not tilted.
4. Lower the key gauge to align the keys using an appropriate method as described under “Aligning Keys …” found in the previous section (see page 10).
5. After the keys are aligned, return the gauge to its “up” position.
6. Press the off/on switch to the “on” position.
7. Lift the carriage with both hands (see Figure 5).

Figure 5

8. Move the carriage to line up the cutter guide with the cut closest to the head on the pattern key. Do not permit the cutter to touch the shoulder of key blanks with shoulders.
9. Press in on the carriage, while guiding it to the left. Carefully trace the cuts of the pattern key with the cutter guide. The cutter will make a corresponding cut in the key blank. When the cut closest to the tip of the pattern key has been traced, retrace the cuts by guiding the carriage to the right. This will clear away any metal not removed during the initial pass over the key blank. Again, on keys with shoulders, do not allow the cutter to contact the shoulder.
10. Press the off/on switch to the “off” position. Remove the blank key. Press the switch to the “on” position and remove any burrs that remain by contacting the key lightly against the deburring brush. Return the switch to the “off” position.
11. Operating Tips - When duplicating a key, avoid an irregular jerking motion in the movement of the carriage. Acquire a smooth steady motion, using both hands on the carriage to guide it. Apply the same degree of pressure each time a key is duplicated. Excessive pressure may cause “over-cutting”. It is sometimes best to practice on a few keys until the operator learns to impart a steady, uniform pressure to the carriage.

INTRODUCTION: In addition to duplicating keys the model 029A using optional accessories, has the capability of cutting keys by code.

The previous section covered the procedures used to duplicate a key from an existing copy. Code cutting, does not require a key to copy. Instead, notches (cuts) are made in the key blank based upon the code number supplied with the original key. Often this number is found on an accompanying tag or break-off tab. If this number is known, the original key is not needed. But you do need the proper code chart, which is a numerical listing of key code numbers. Listed beside each key code number on the chart will be a corresponding series of digits which is the key cut combination for that particular code; in short, the actual cuts which should appear on a given key.

There are two critical dimensions in code cutting - **spacing** of the cuts and **depth** of the cuts. **Spacing** refers to where the cuts are placed along the blade of the key "laterally". The component which controls the spacing dimension when cutting a key by code using the model 029A is call a spacing key. Spacing keys are either "tip stop" or "shoulder stop" in design (see Fig. 6). This indicates how a particular spacing key and key

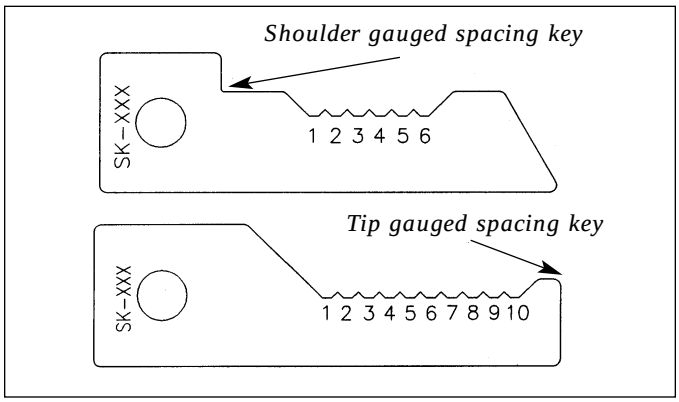


Figure 6

blank should be aligned prior to cutting. The series of cuts found on a spacing key are numbered and correspond to the correct order in which cuts will be made to the key blank. This will be fully explained later.

Depth refers to how deeply the notch (cut) is made into the blade of the key. The component which controls the depth dimension for code cutting purposes is called the depth knob (see Fig. 7). There are a series of numbers which circle a depth knob. These digits correspond to the digits found beside a code number on a code chart.

Figure 7

IMPORTANT: Refer to the Application Guide to determine which specific spacing key and depth knob to use for a given application. Each spacing key is stamped with "SK" - followed by a 3 digit number; depth knobs are stamped with letters to aid in identification.

CUTTING KEYS BY CODE - PROCEDURES

Application Guide

The Application Guide that accompanies your machine is a very important item when cutting keys by code. Its most important function is to specify which depth knob, spacing plate, and key blank is required for a specific lock application. It also will indicate the proper vise jaw position required to properly grip the key blank for code cutting.

Changing the Depth Knob

When referring to the Application Guide you may find that the key you wish to make requires a depth knob different from the one already on the machine. Changing the depth knob is easy; simply remove the retaining screw (see Fig. 8) and slip the current depth knob off by

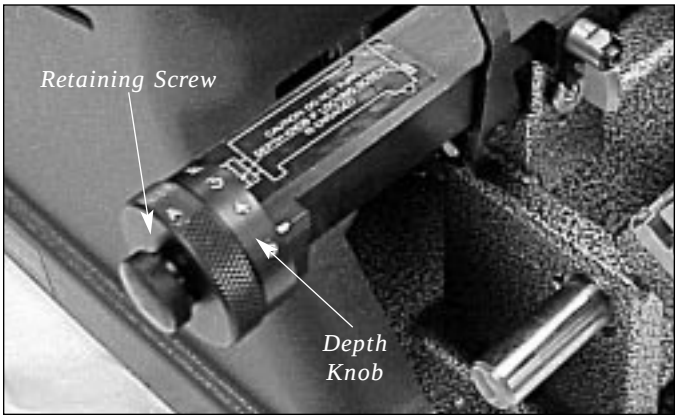


Figure 8

pulling it to the left. Install the selected knob by aligning the slot on its right side with the pin projecting up from the shaft it attaches to. Reinstall the retaining screw finger tight, and the change is complete.

Vise Jaw Positioning

The 029A is equipped with "four-position" vise jaws. The proper vise position to use (Code, A, B, etc.) will be indicated in the Application Guide for each key listed. It is IMPORTANT to remember that both vise jaws should be set to the positions indicated in the booklet.

KEY ALIGNMENT - CODE CUTTING

Aligning keys in the vise jaws for code cutting keys with shoulders

WARNING: Do not install or remove keys unless the off/on switch is in the <u>off</u> position.

One difference between duplicating keys and code cutting them is that the vise jaws are not always positioned to the same stations or sides. The **LEFT** and **RIGHT** vise jaws should be positioned to the settings indicated in the Application Guide.

After positioning the vise jaws to the proper setting, both the spacing key and the key blank must be properly aligned and securely clamped in the vise jaws. To do this, slide the machine's carriage assembly towards the right and position the appropriate key blank in the carriage's RIGHT vise jaw with the head of the blank pointing to the left.

Ensure that the shoulder of the key blank is roughly aligned with the red mark on the vise jaw face. Verify that the key blank is held level (not tilted), and tighten the wing nut. Position the appropriate Spacing Key in a similar manner in the Left vise jaw.

Next, lower the key gauge and position the carriage so that the edges of the gauge contact the shoulders of both the Spacing Key and the blank key **at the same time**. You may have to loosen the wing nut securing one of the keys and reposition it slightly. **It is important** that the shoulder of both keys are in contact with the gauge at the conclusion of this step.

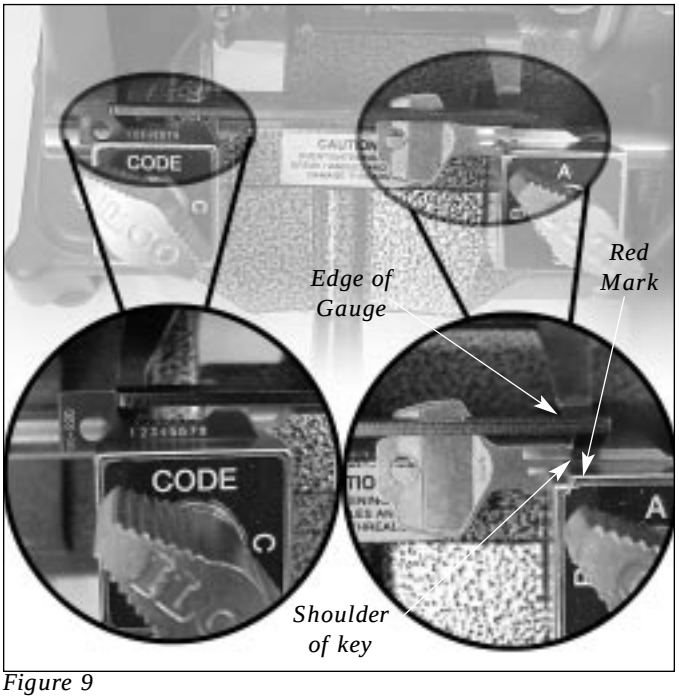


Figure 9

Aligning keys in the vise jaws for code cutting keys without shoulders

On keys such as the Ford double sided key, which do not have a conventional shoulder, the tip of the key is used as the aligning point (see Fig. 10). Clamp the blank key in first and move the machine carriage to the left. Lower the key gauge and position the carriage so the tip of the Ford key touches the key gauge. Install and align the spacing key in the left vise jaw in the same manner.

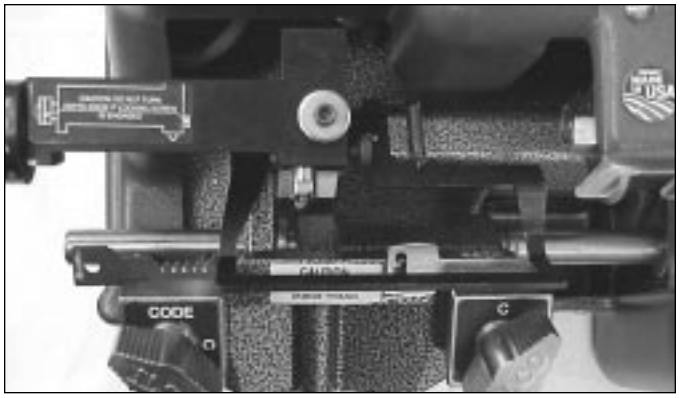


Figure 10

To make the process of cutting by code easier to understand follow the step-by-step example provided below.

WARNING: Do not install or remove keys unless the off /on switch is in the <u>off</u> position!

Scenario: A key needs to be cut by code from key code #10J4 for a General Motors vehicle. The proper code chart for this code series has been accessed and it indicates the key cut combination for key code 10J4 is 355331. With this information known, it is possible to continue the steps needed to create a working key from this number.

1. Refer to the Application Guide and "look up" by vehicle brand and model the code series containing the code number needed. The Guidebook will list the proper Depth Knob, Spacing Key, key blank, and vise jaw position for the application selected.
2. Install the depth knob indicated by the Application Guide onto the model 029A. In the example above, the specified Depth Knob is "A".
3. Rotate both vise jaws to the position specified (wide).
4. **Ensure that the cutter guide lock screw is loosened to allow the guide to spring forward (see Fig. 11).**
5. Clamp the Spacing Key (SK-100) and key blank

Figure 11 - Loosen Cutter Guide Lock Screw to allow guide to spring forward for code cutting

   specified for the intended application into the vise jaws. (Refer to Application Guide for proper vise jaw positioning.)
6. Lower the key gauge to align the spacing key and key blank using the appropriate method as described under "Aligning keys…" found in the previous section (see page 17).
7. After they are aligned, return the gauge to its "up" position.
8. The key cut combination for the sample key is 355331. Enter this number on the key cut display (see Fig. 12). This device provides an easy to read display of the number and can be referred to as the key is cut. You are now ready to begin cutting the key!
9. Press the off/on switch to the "on" position.

Figure 12 - Rotate thumb wheels on display to change numbers shown

10. Rotate the Depth Knob to the number that corresponds to the first number of the desired key cut combination. In our example, 355331, this number would be "3'(see Fig. 13).
11. Lift the carriage with both hands and position it so

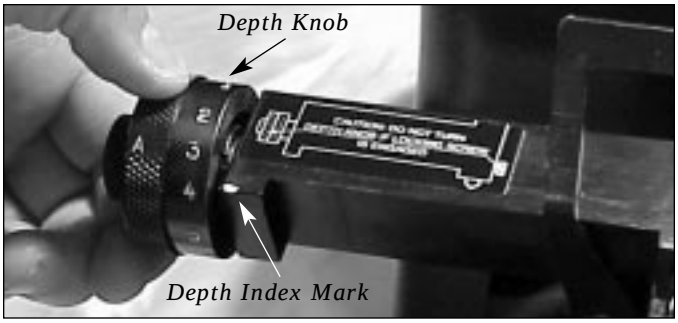


Figure 13

   that the cutter guide is directly in front of the cut on the Spacing Key marked "1" (see Fig. 14).
12. Apply moderate pressure to enable the cutter

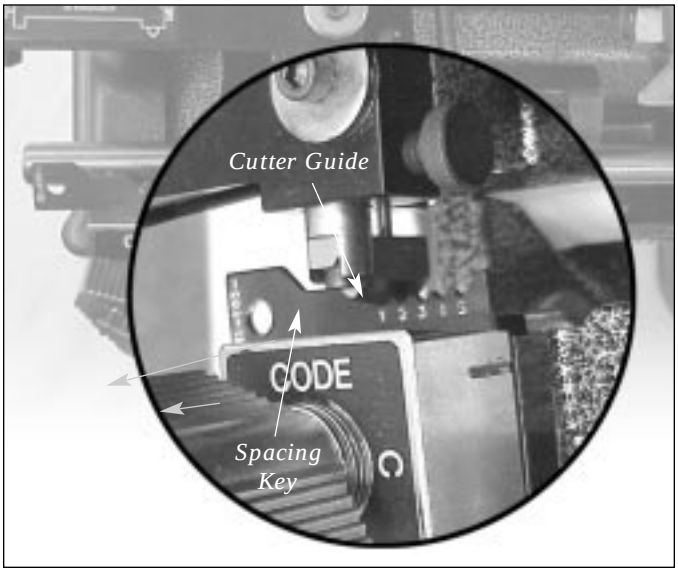


Figure 14

   guide to enter into the "1" cut on the spacing key. As you apply pressure, the cutter guide, which is spring loaded, will retract enabling the key blank to contact the cutter and thus create the first cut of the key cut combination. Use a "straight in - straight out" cutting action.
13. Allow the carriage to return to its "rest" position.

THE CUTTING OPERATION (CON'T)

14. Rotate the Depth Knob to the number that corresponds to the second number of the desired key cut combination. In our example 355331, this number would be “5”.
15. Repeat step 12, but position the cutter guide into the “2” cut on the spacing key instead. In essence, the numbered cuts on the spacing key correspond to the proper location where each cut of the key cut combination should be placed. Therefore, the third cut of key cut combination 355331, which is a “5”, will be created using the #3 position on the spacing key and so on. **Remember the Depth Knob controls the depth of a cut, the Spacing Key determines its location!.**
16. Once each cut of the key cut combination has been produced onto the key blank, remove it after first ensuring the machine's off/on switch is in the “off” position. In the case of a double sided key, reclamp the spacing key and key blank as was initially done. Repeat steps 9-16.
17. To deburr the completed key, press the off/on switch to the “on” position and contact the key lightly against the deburring brush. Return the switch to the “off” position.

REPLACING THE CUTTER/ADJUSTMENTS

Replacing the Cutter

The CU29 cutter used on this machine is 2 1/4" in diameter. It is specially designed for versatility and can be used to duplicate and code cut most automotive type keys. No warranty is placed on the cutter, operators should treat it with care and avoid harsh usage. Do not force the carriage up, causing the key blank to bang into the cutter, and do not apply heavy pressure when cutting. Also, do not let the cutter run into the vise jaw; this will dull the cutter quickly.

As with any metal cutting instrument, the CU29 will dull with usage. There are three ways to tell when a cutter is dull and requires replacing:

1. Time - a dull cutter takes longer to make the cuts.
2. Sound - A dull cutter will emit a shrill sound as it runs across the key blank.
3. Burrs - a dull cutter will not cut away the metal but will roll it away. When this occurs, there will be a buildup of metal burrs on the underside of the key. If this buildup is heavy, the cutter is dull. A sharp cutter leaves little or not burrs.

To replace the cutter, use two wrenches, one 3/4" wrench for the cutter nut and one 1/2" wrench for the cutter shaft. Set the two wrenches in position and loosen the cutter nut. Note that the cutter nut has a reverse thread and turns clockwise to loosen. Remove the spacer washers and the dull cutter. Install the new cutter, the washers, and the nut. **Please note that the machine should be unplugged from its power source and the hood removed before performing this procedure.**

Adjusting for Depth of Cut

To ensure safety, UNPLUG machine from its power source before adjusting for depth of cut. It is imperative that the cutter guide and cutter operate in the same plane, that is, aligned to each other. If the cutter guide is adjusted too far forward, the resulting cuts in a key blank will be too shallow and the keys cut will not work. Likewise, if the cutter guide is “behind” the cutter, the cuts in the key will be too deep.

1. **To check the depth adjustment,** insert two identical key blanks into the vise jaws ensuring that they are positioned flat (not tilted) in the vise jaws. It is not necessary to align them with the key gauge for this procedure.
2. Rotate the depth knob to its deepest cut position.
3. IMPORTANT: Press in on the cutter guide until it stops and tighten the cutter guide lock screw (see Fig. 15).

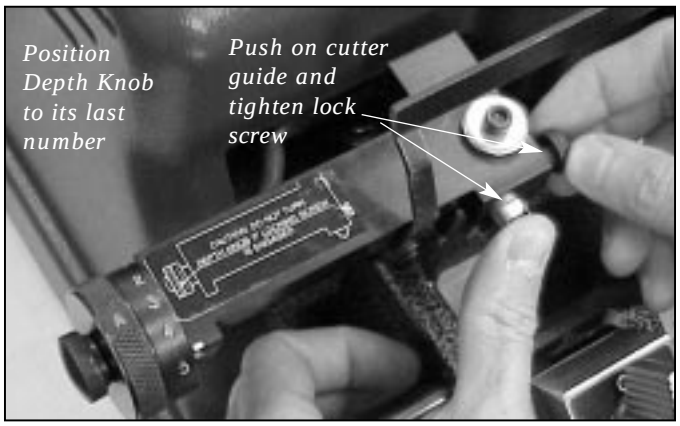


Figure 15

REPLACING THE CUTTER/ADJUSTMENTS (CON'T)

4. Raise the carriage, positioning the blank on the left against the cutter guide and the right blank against the cutter. Turn the machine pulley by hand and note the right blank. The cutter should **barely graze** the key blank when the adjustment is correct (see Fig. 16).

Figure 16 - Adjustment is correct when both keys touch

NOTE: No cutter is perfectly round so make one complete rotation of the cutter before changing adjustment. There will be a high point on the cutter; the adjustment should be made to the high point. If the cutter does not contact the key blank after one rotation, or contacts excessively, proceed to change the adjustment.

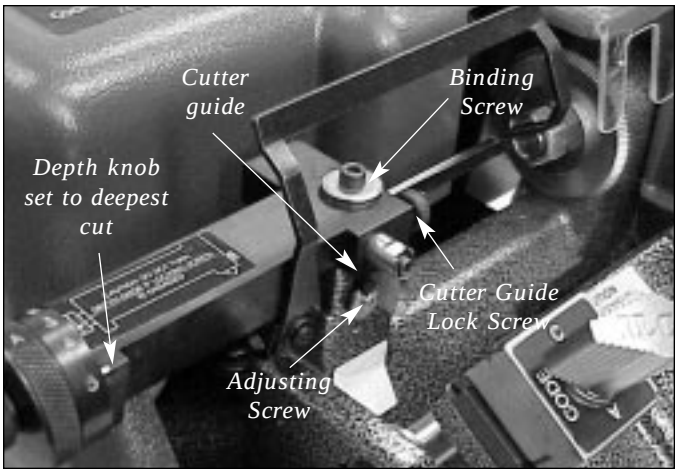


Figure 17

5. To adjust the cutter guide, slightly loosen the binding screw (see Fig. 17).
6. With a flat screwdriver, turn the adjusting screw in (to increase cut) and/or out (to decrease depth of cut). Again, proper adjustment is achieved when the cutter barely grazes the key blank.
7. Retighten the binding screw to complete the adjustment.

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